FIG.1

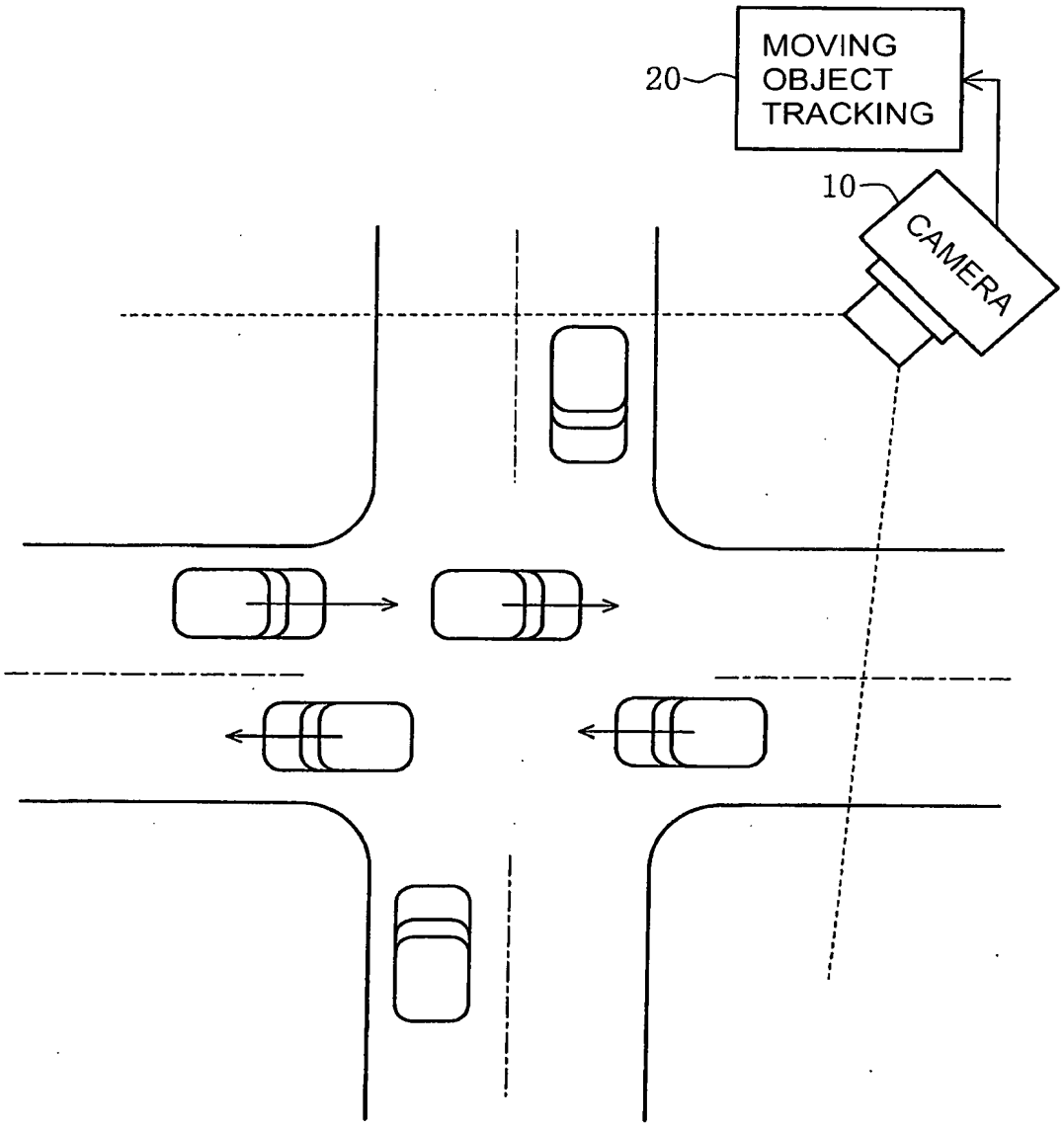


FIG.2

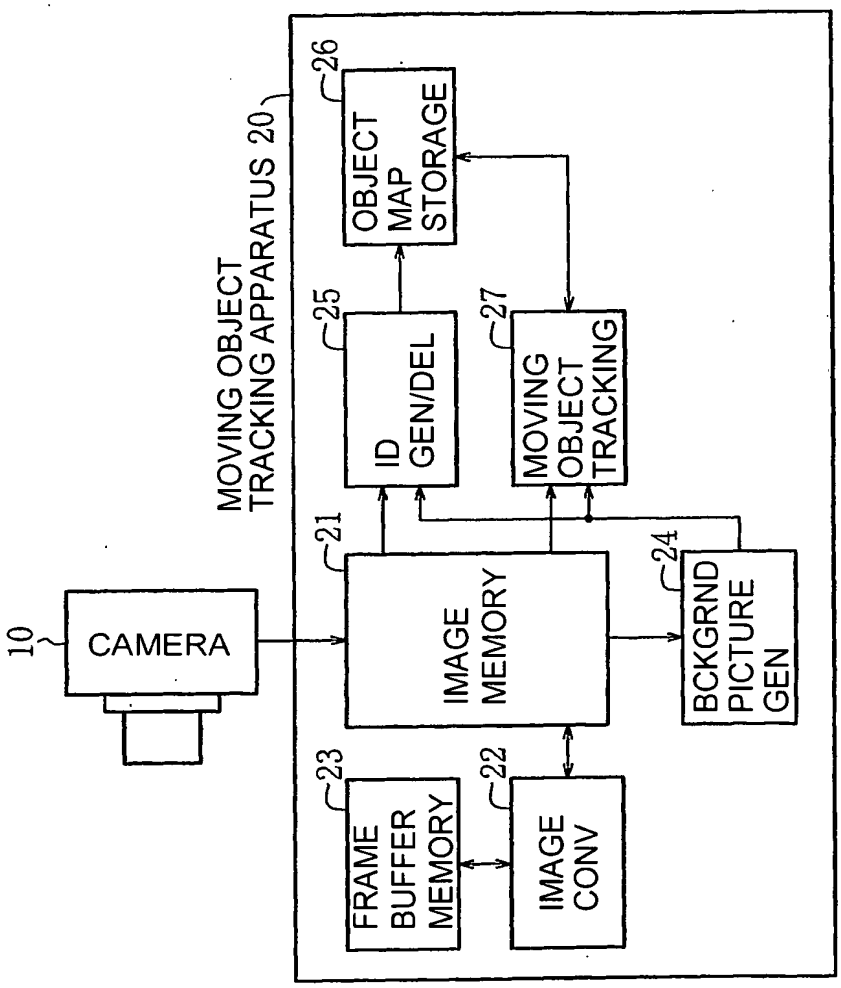

MOVING OBJECT TRACKING APPARATUS 20
10
CAMERA
21
IMAGE MEMORY
24
BCKGRND PICTURE GEN
25
ID GEN/DEL
26
OBJECT MAP STORAGE
27
MOVING OBJECT TRACKING
23
FRAME BUFFER MEMORY
22
IMAGE CONV

FIG.3

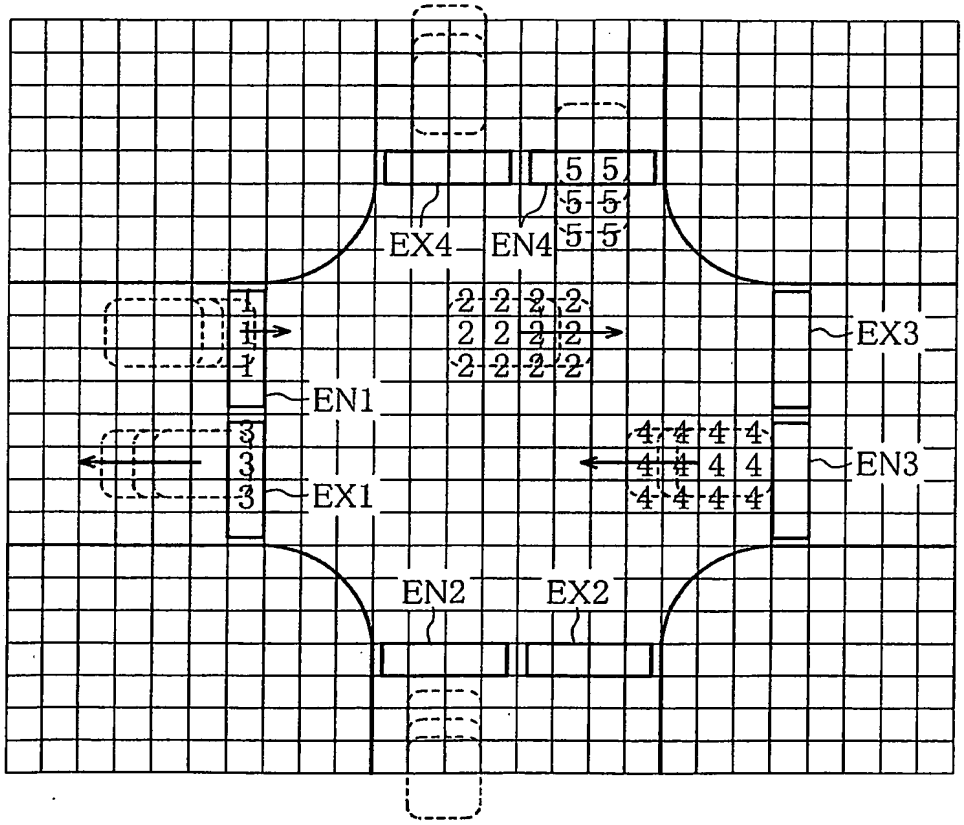


FIG.4

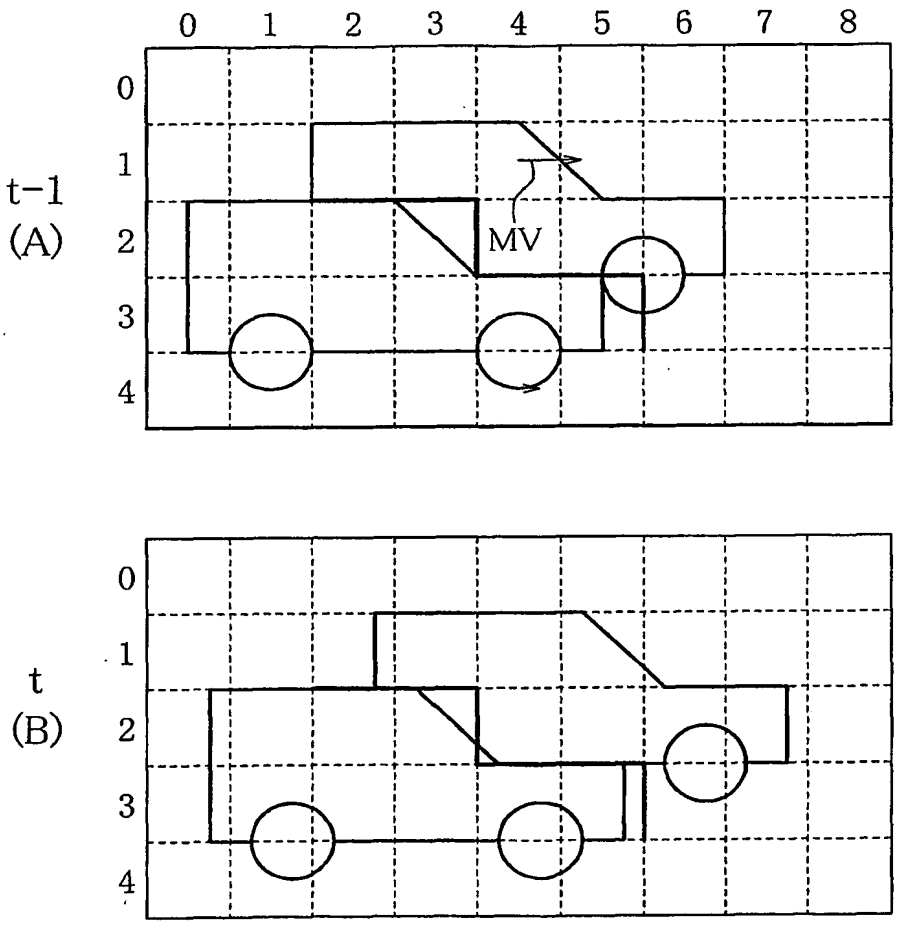


FIG.5

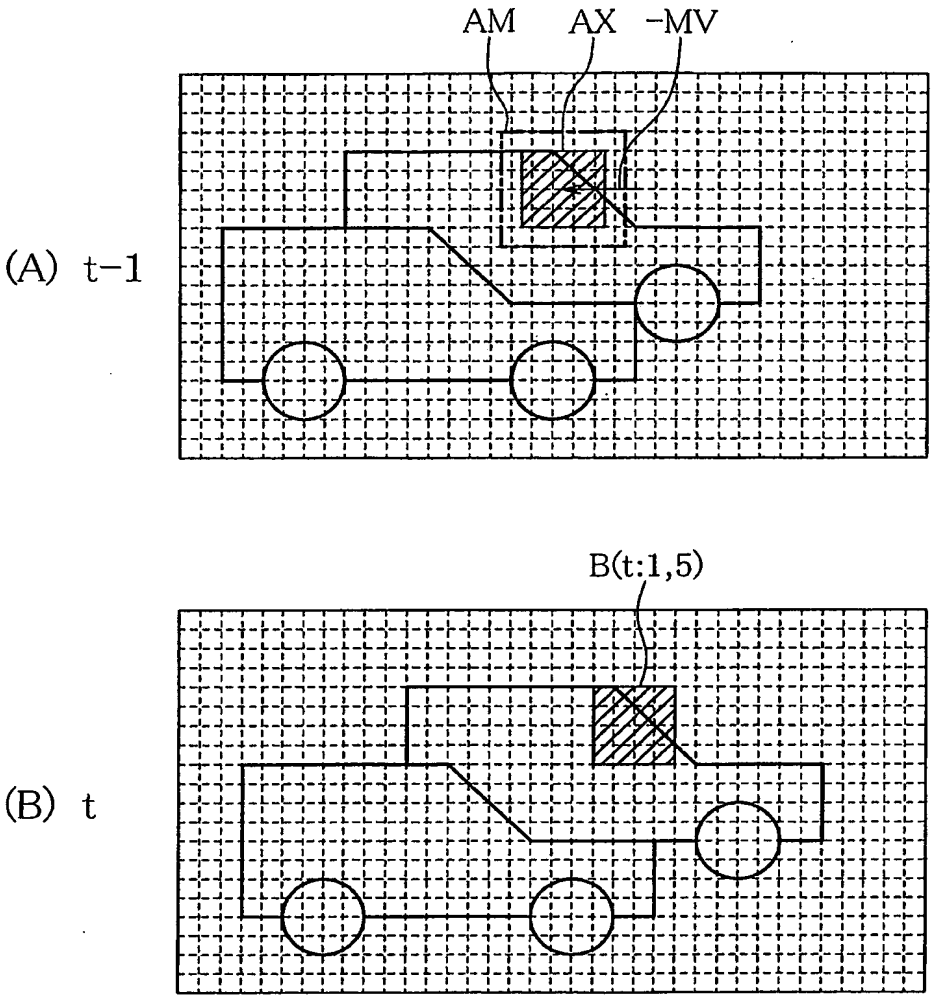
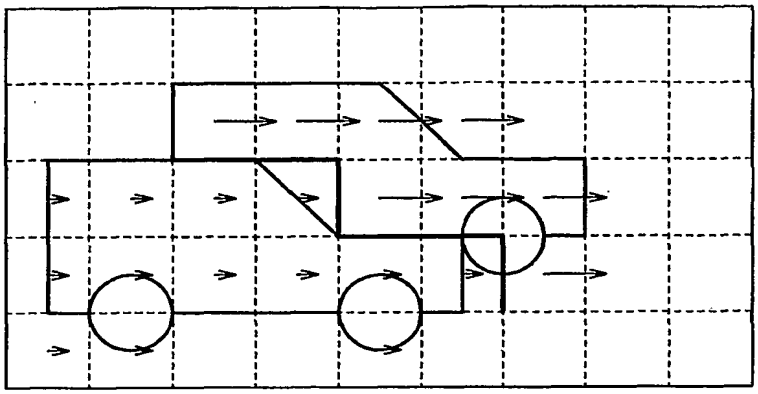


FIG.6

(A) t-1



(B) t

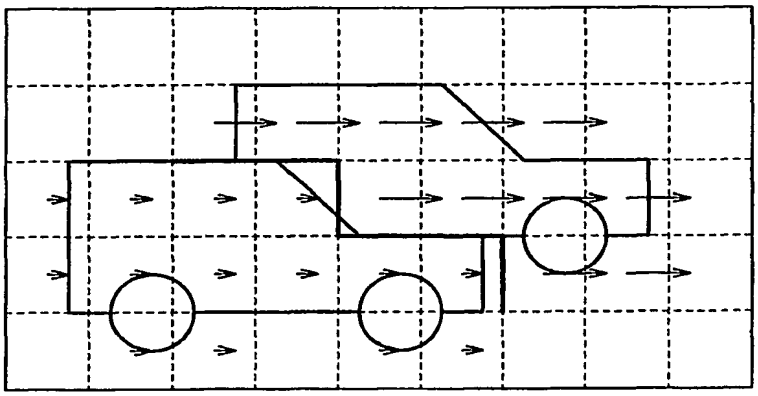
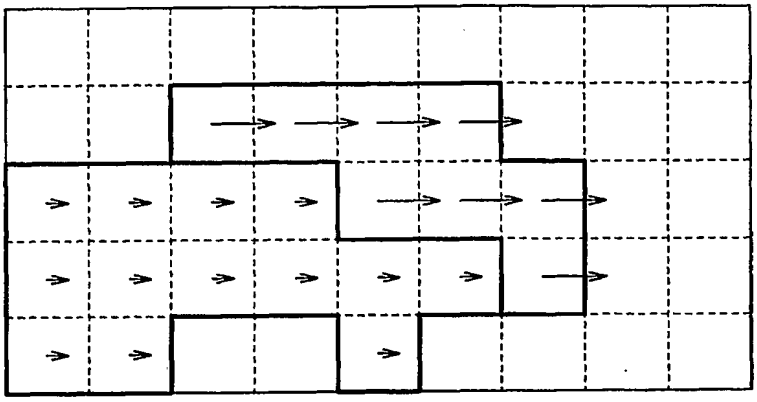


FIG.7

(A) t-1



(B) t

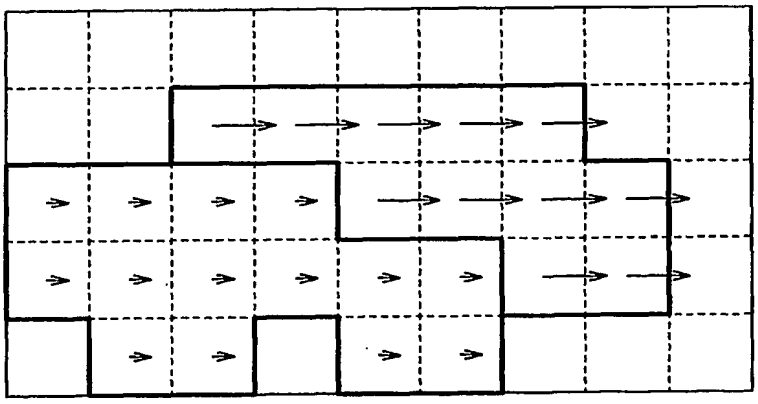


FIG.8

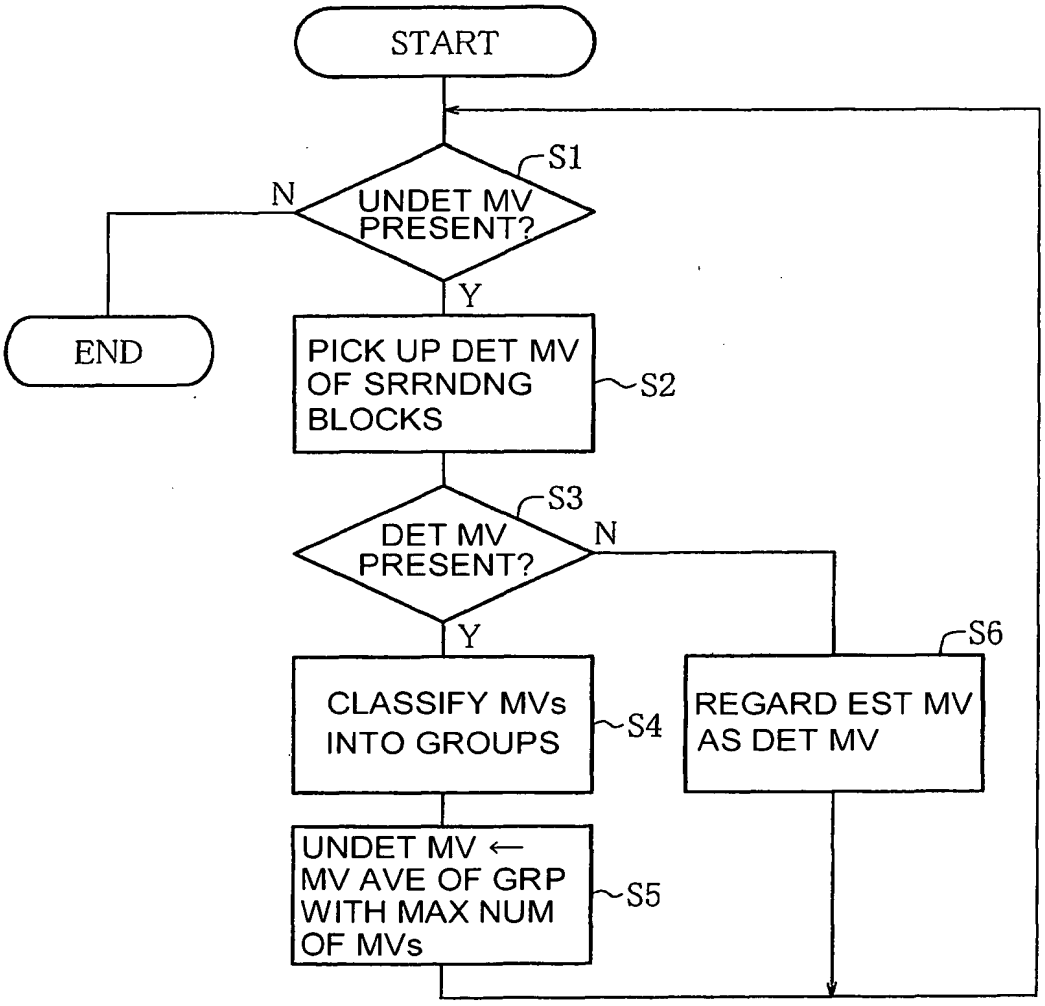

START
S1
UNDET MV PRESENT?
N
Y
END
PICK UP DET MV OF SRRNDNG BLOCKS
S2
S3
DET MV PRESENT?
N
Y
S6
CLASSIFY MVs INTO GROUPS
S4
REGARD EST MV AS DET MV
UNDET MV ← MV AVE OF GRP WITH MAX NUM OF MVs
S5

FIG.9

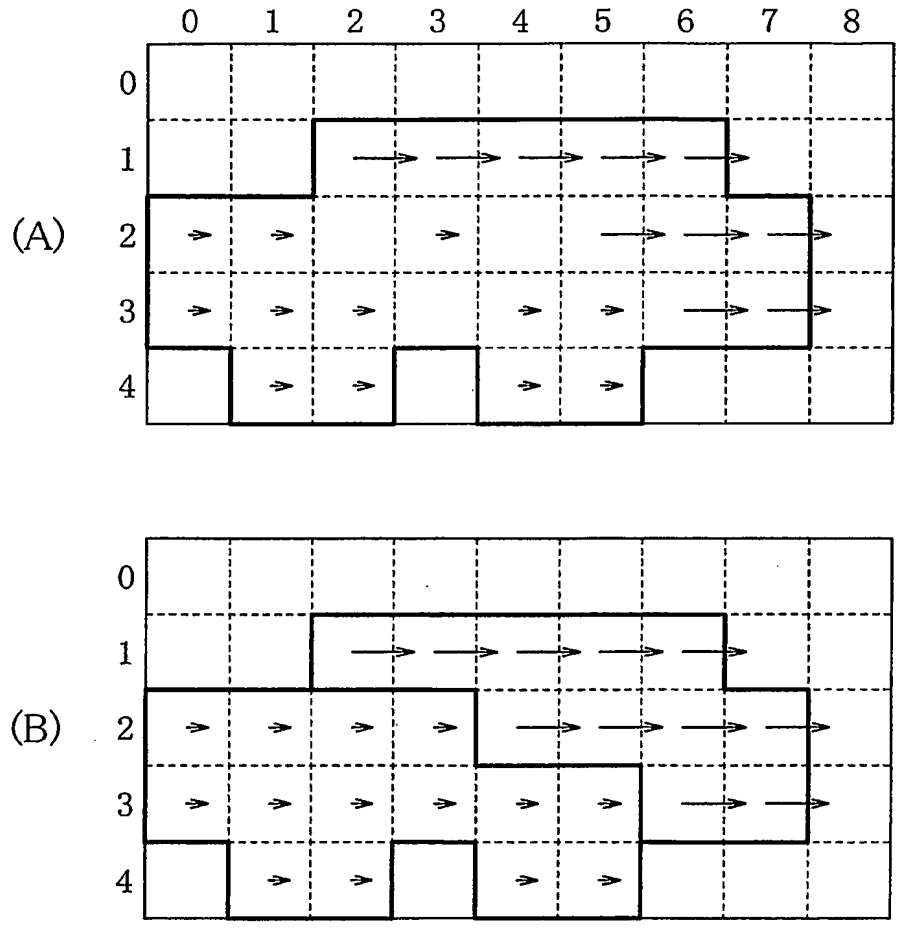
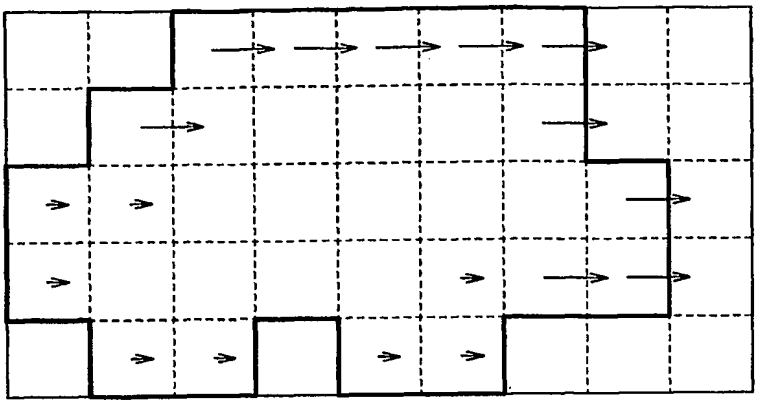
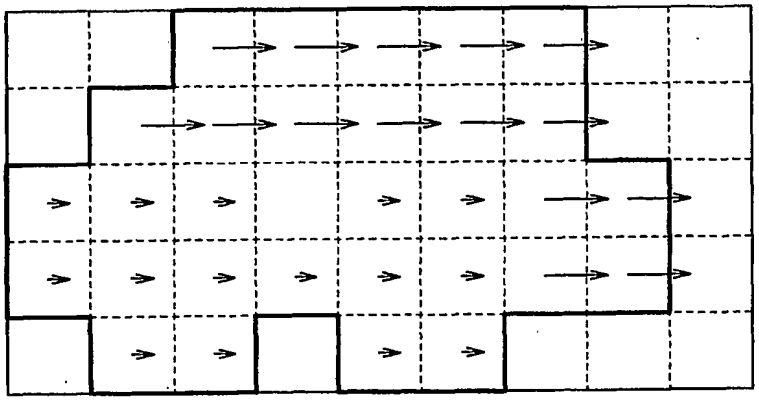


FIG.10

(A)



(B)



(C)

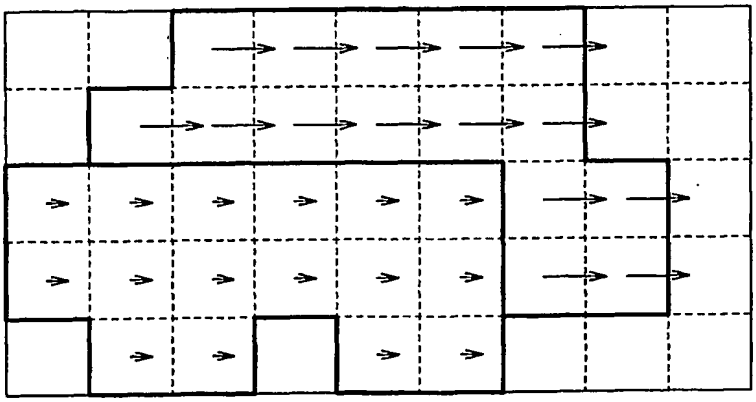


FIG.11

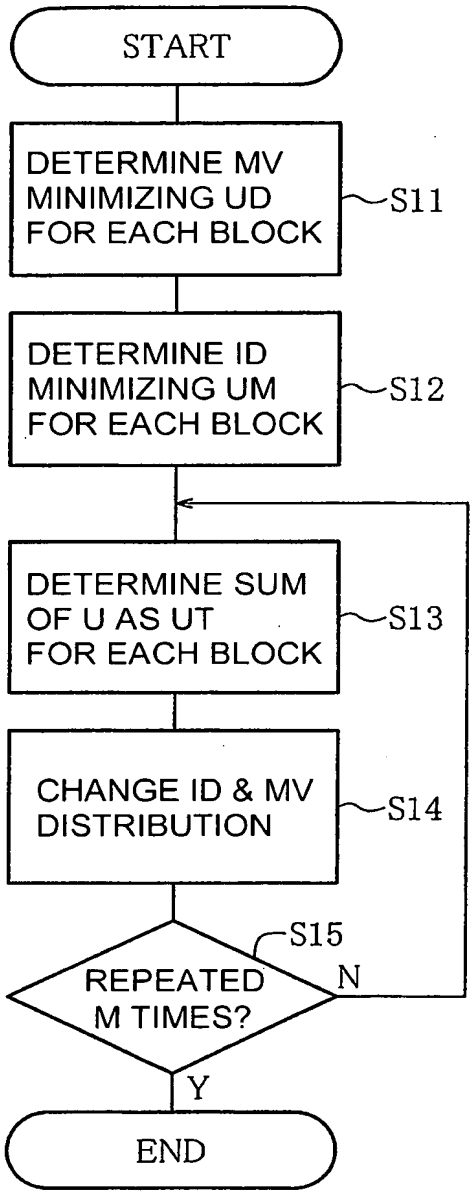

START
DETERMINE MV MINIMIZING UD FOR EACH BLOCK
S11
DETERMINE ID MINIMIZING UM FOR EACH BLOCK
S12
DETERMINE SUM OF U AS UT FOR EACH BLOCK
S13
CHANGE ID & MV DISTRIBUTION
S14
S15
REPEATED M TIMES?
N
Y
END

FIG.12

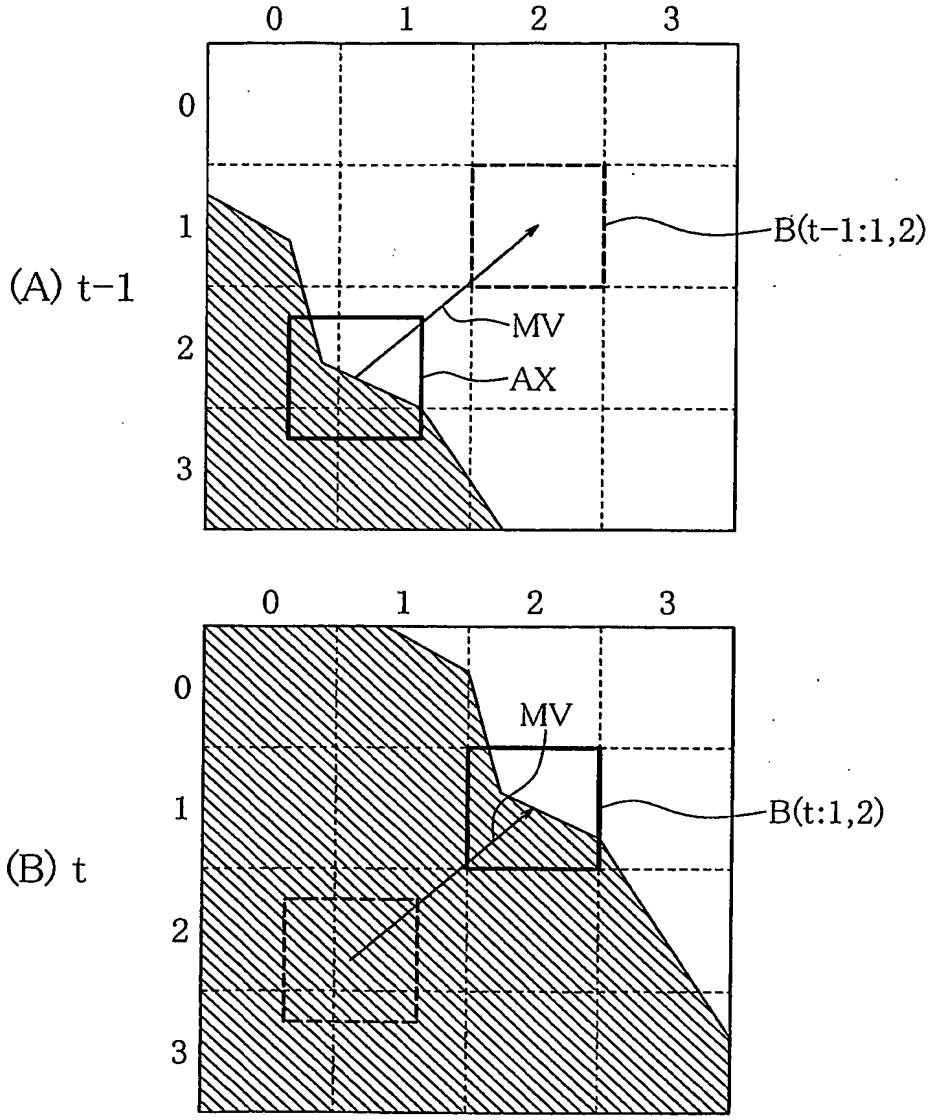


FIG.13

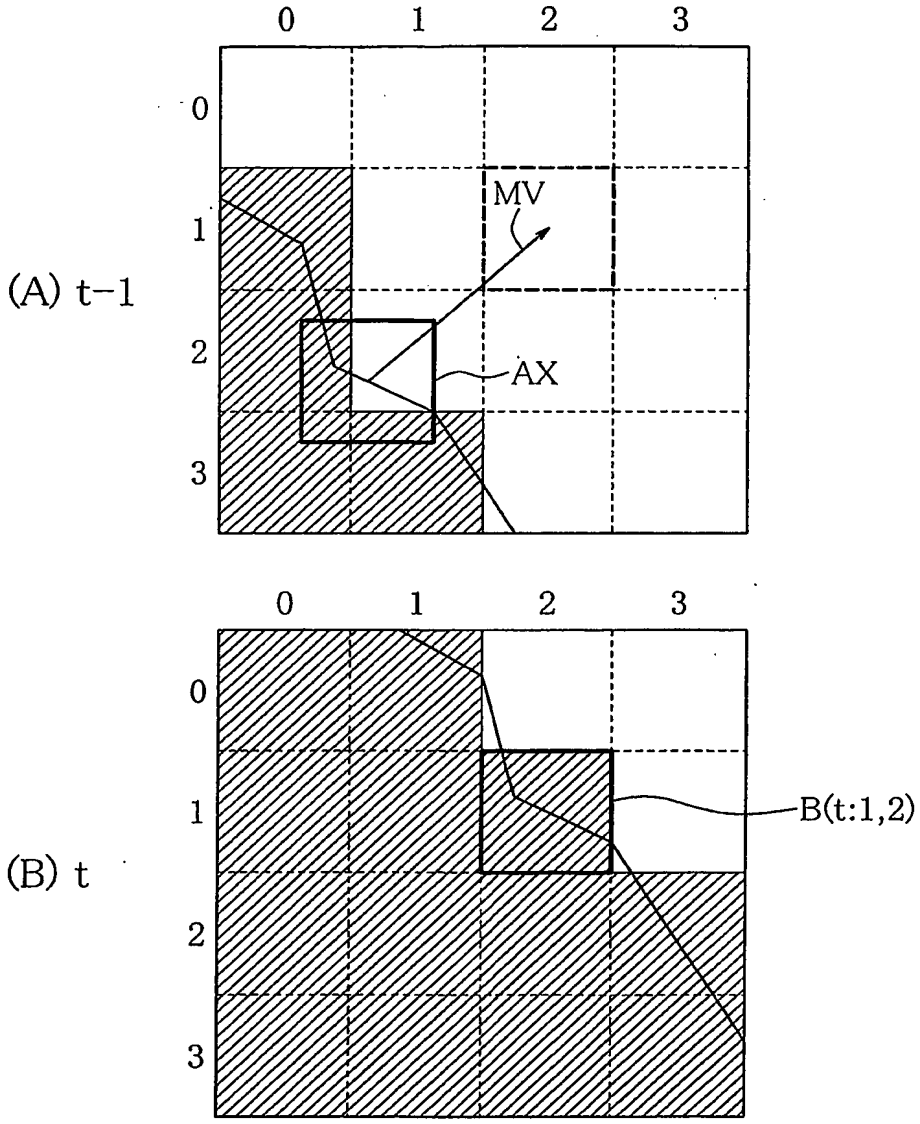
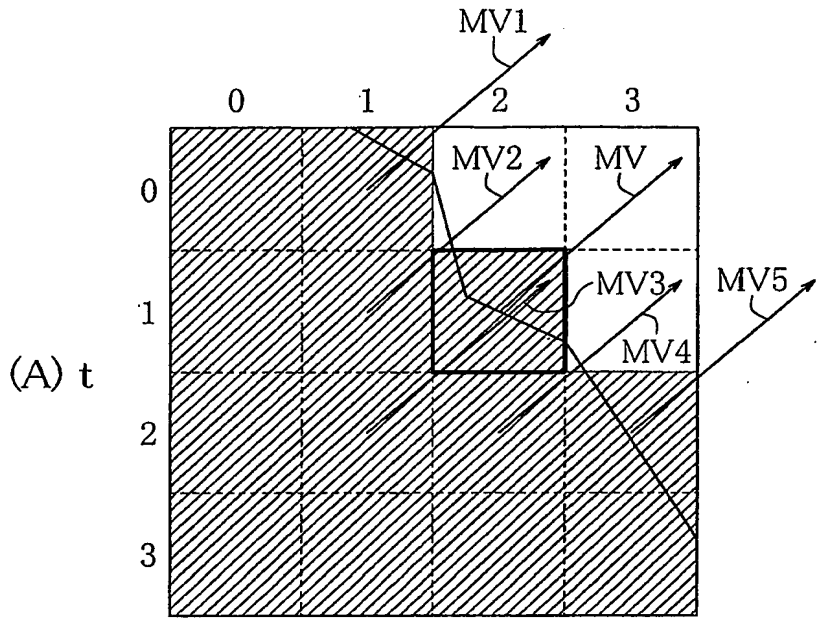


FIG.14



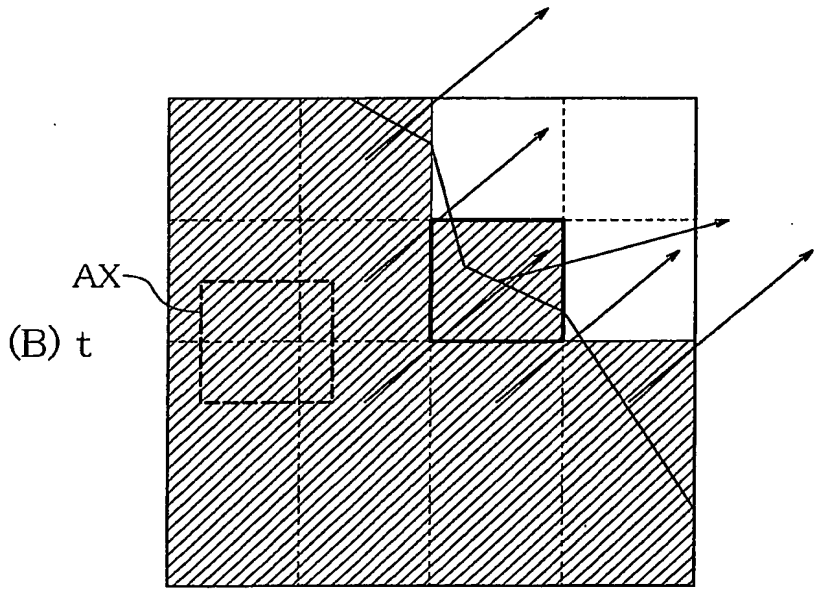
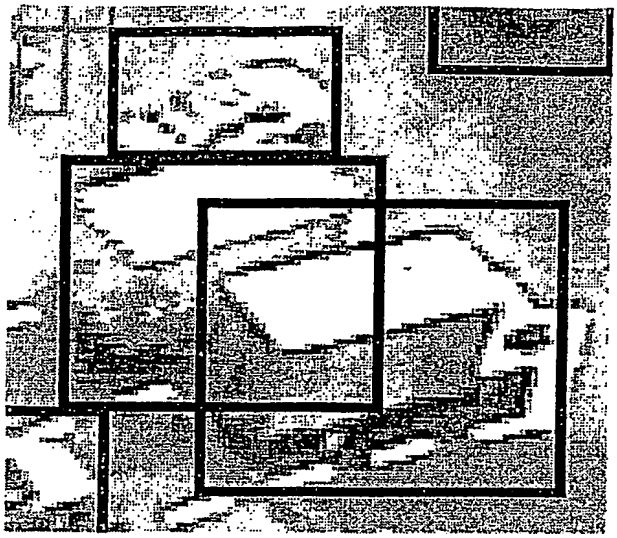


FIG.15

(A)

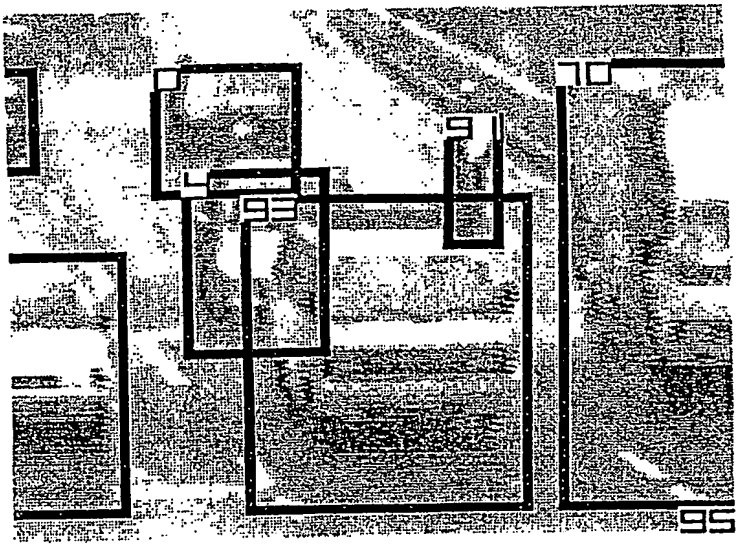


(B)

					7							
				7	7	7						
		7	7	7	7	***						
	34	***	34	34	34	34	34					
	34	34	34	34	34	34	34	***	58			
		34	34	34	34	34	58	58	58	58		
	34	34	34	***	58	58	58	58	58	58	58	
	34	34	34	58	58	58	58	58	58	58	58	
		34	34	58	58	58	58	58	58	58	58	
				58	58	58	58	58	58			
					58	58						

FIG.16

(A)


70
91
93
95

(B)

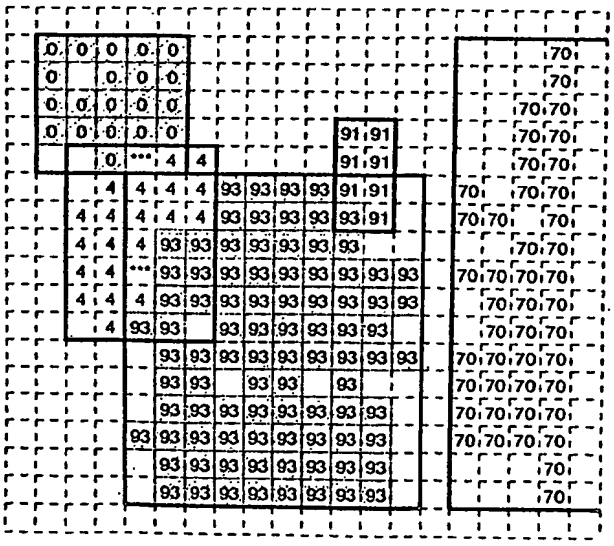
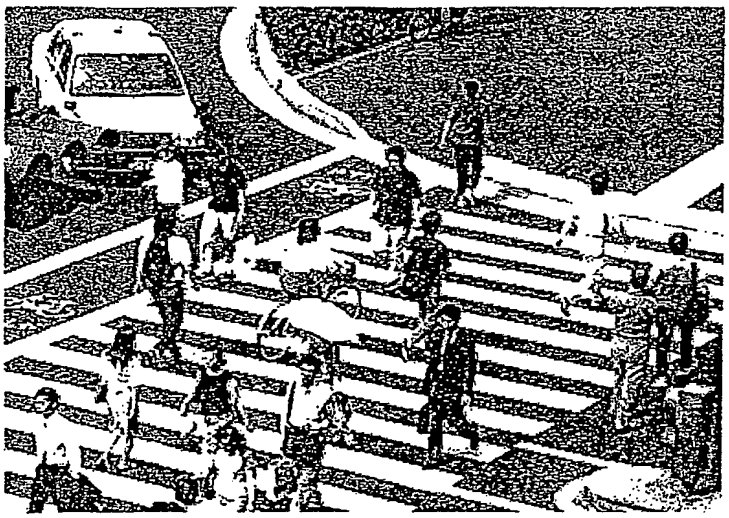

0 0 0 0 0
0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 4 4 4 4 93 93 93 93 91 91
4 4 4 4 4 93 93 93 93 93 91
4 4 4 93 93 93 93 93 93 93
4 4 93 93 93 93 93 93 93 93 93
4 4 4 93 93 93 93 93 93 93 93
4 93 93 93 93 93 93 93
93 93 93 93 93 93 93 93 93
93 93 93 93 93 93
93 93 93 93 93 93 93 93
93 93 93 93 93 93 93 93 93
93 93 93 93 93 93 93 93
93 93 93 93 93 93 93 93
70
70
70 70
70 70 70
70 70 70 70
70 70 70 70 70
70 70 70 70
70 70 70 70
70 70 70 70
70 70 70 70
70 70 70 70
70
70

FIG.17

(A)



(B)

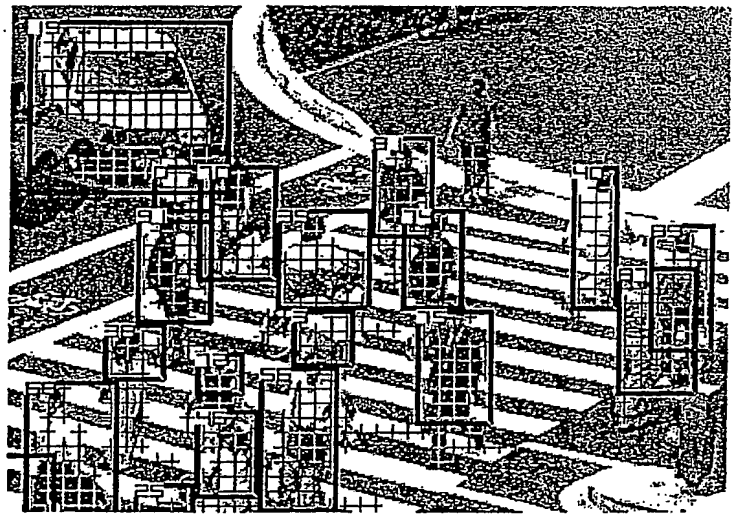


FIG018

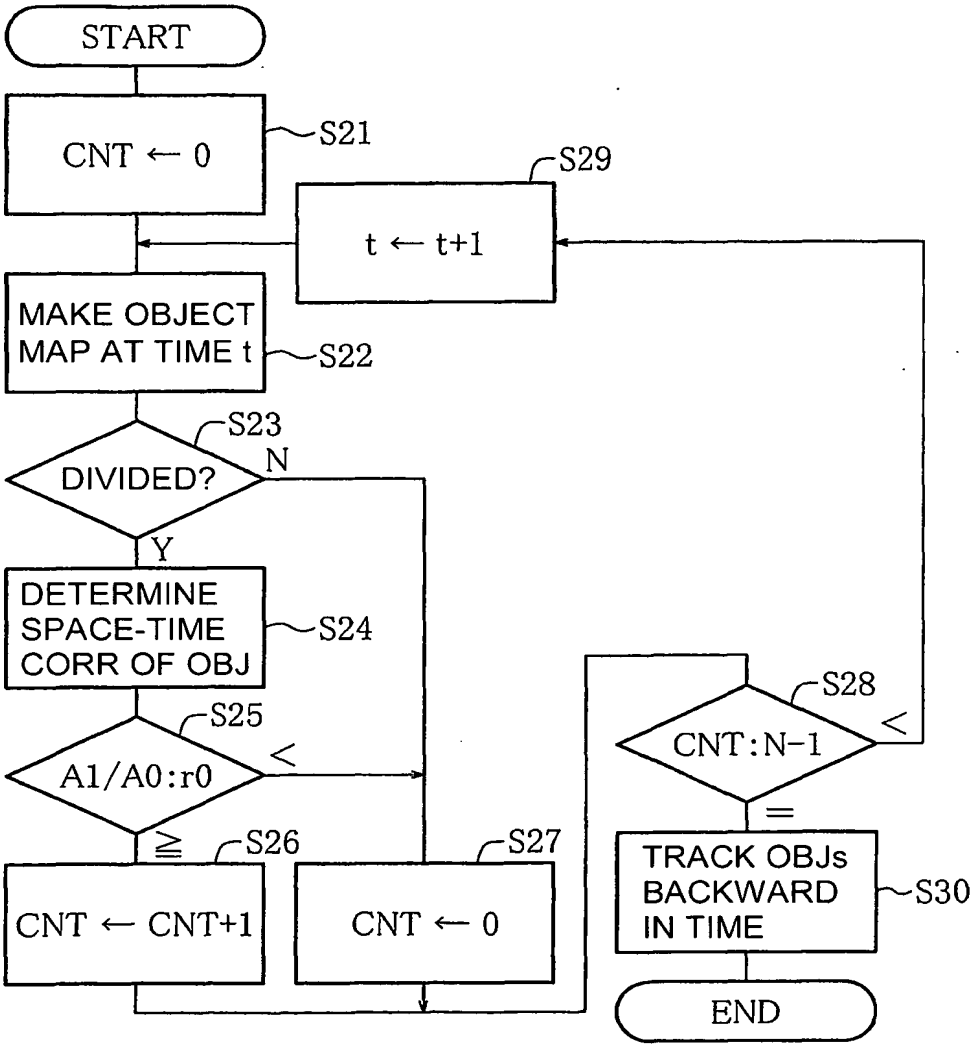

START
CNT ← 0
S21
S29
t ← t+1
MAKE OBJECT MAP AT TIME t
S22
S23
DIVIDED?
N
Y
DETERMINE SPACE-TIME CORR OF OBJ
S24
S25
A1/A0:r0
<
≧
S26
S27
CNT ← CNT+1
CNT ← 0
S28
CNT:N-1
<
=
TRACK OBJs BACKWARD IN TIME
S30
END

FIG.19

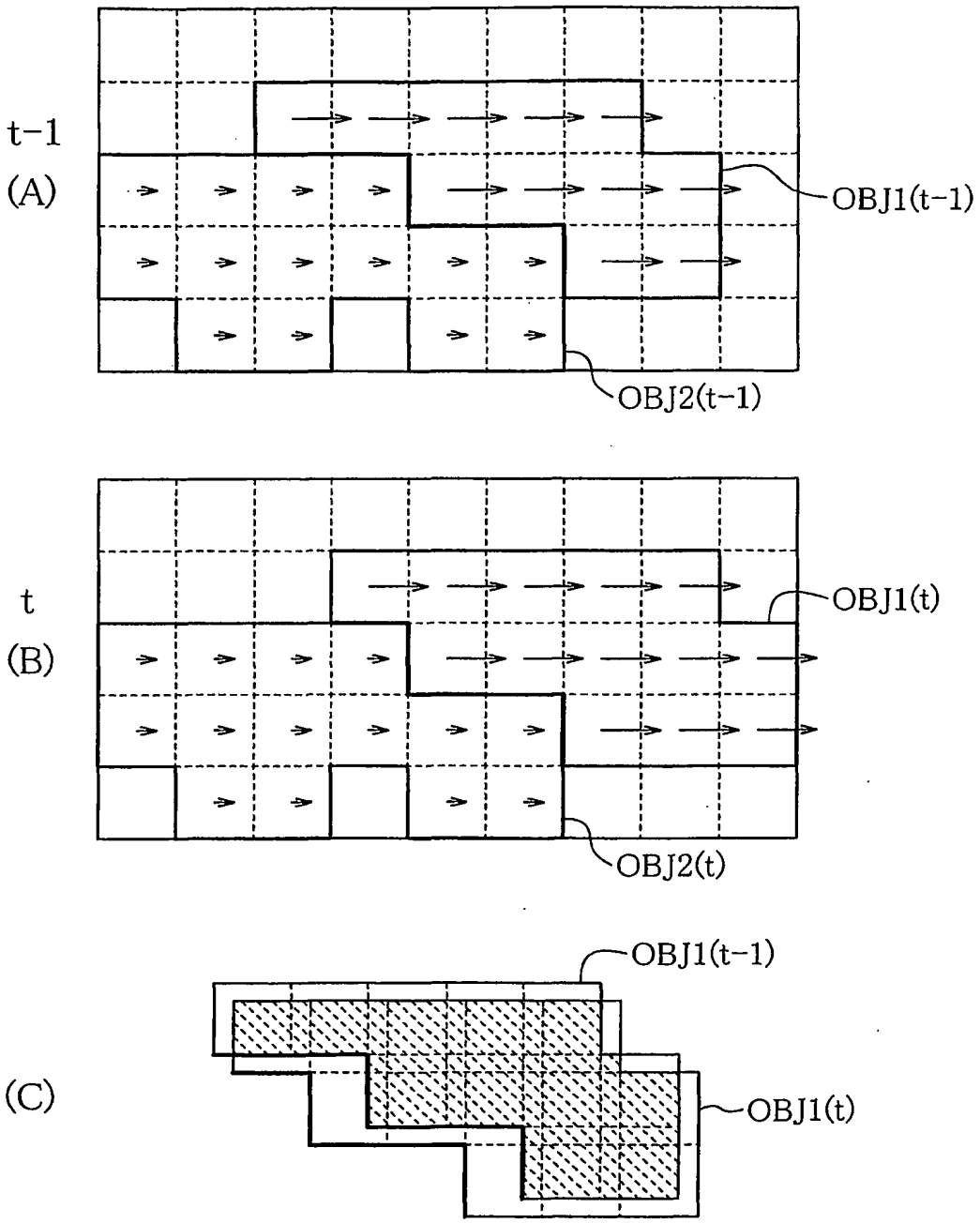


FIG.20

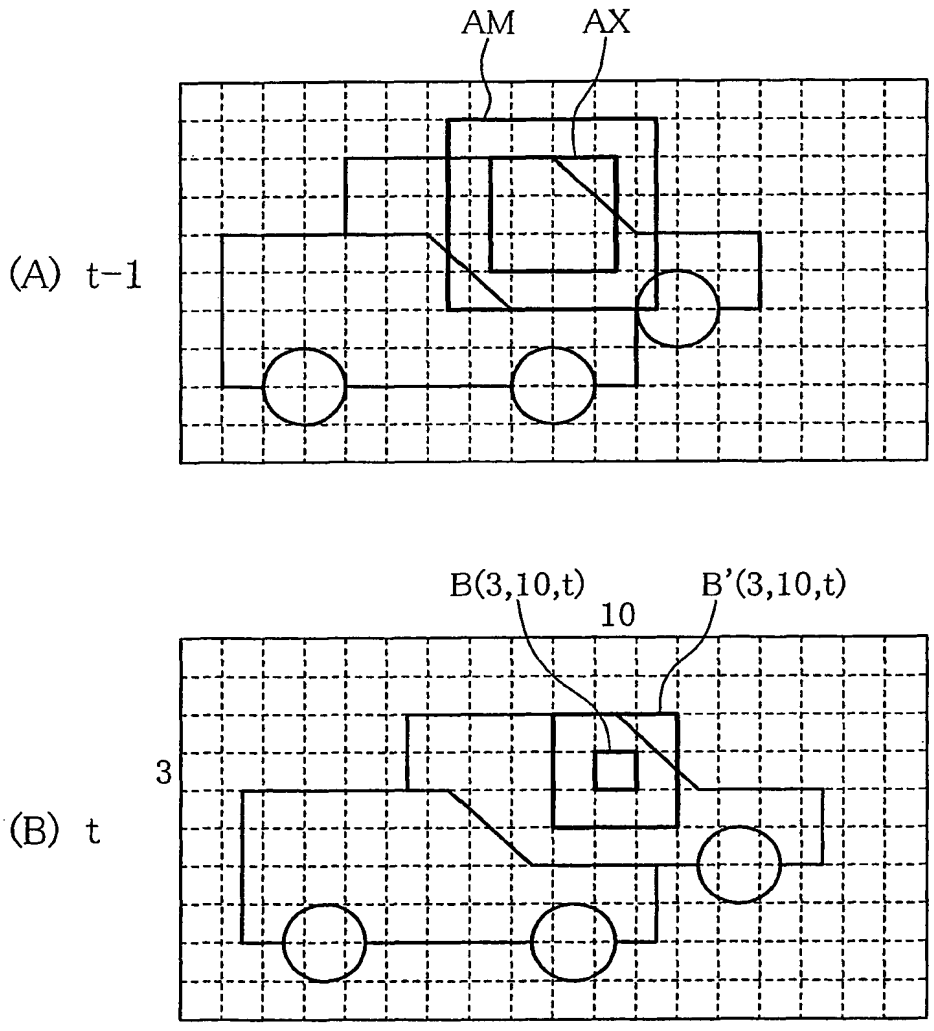
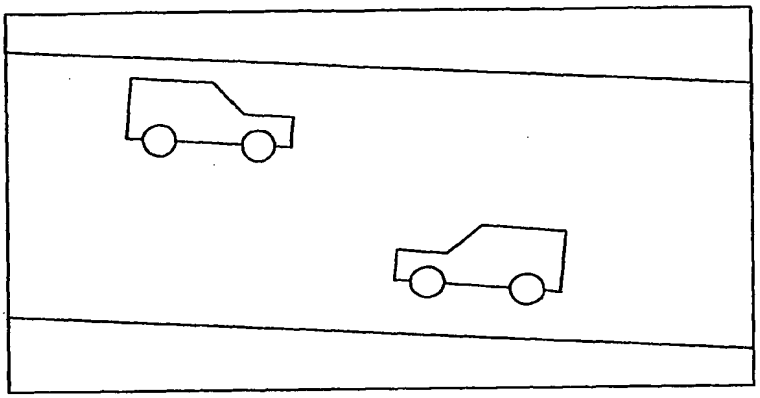


FIG.21

(A)



(B)

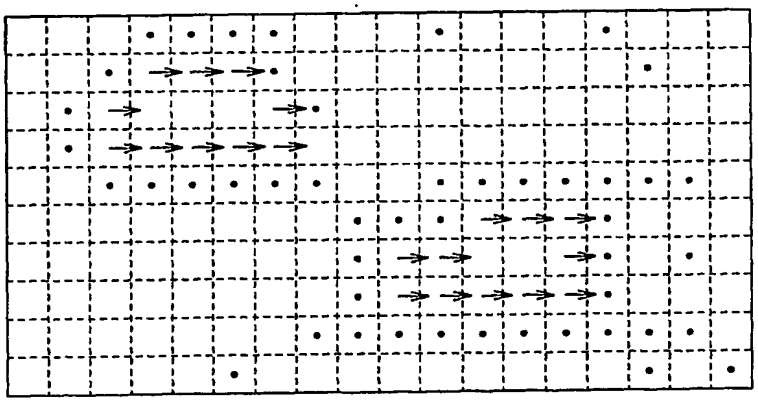
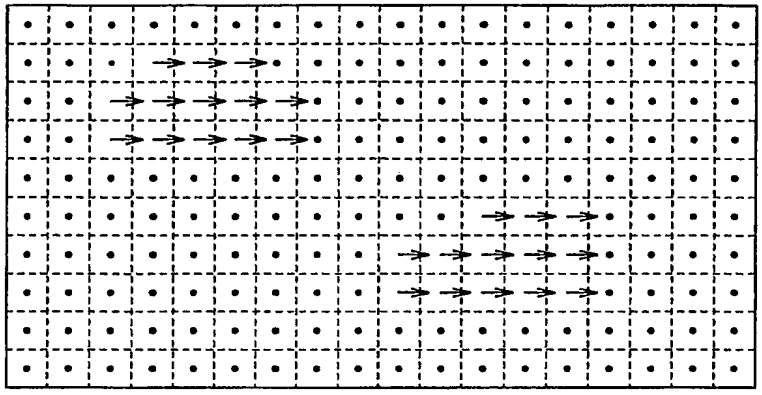


FIG.22

(A)



(B)

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0
0	0	0	0	0	0	0	0	0	2	2	2	2	2	0	0	0	0
0	0	0	0	0	0	0	0	0	2	2	2	2	2	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FIG.23

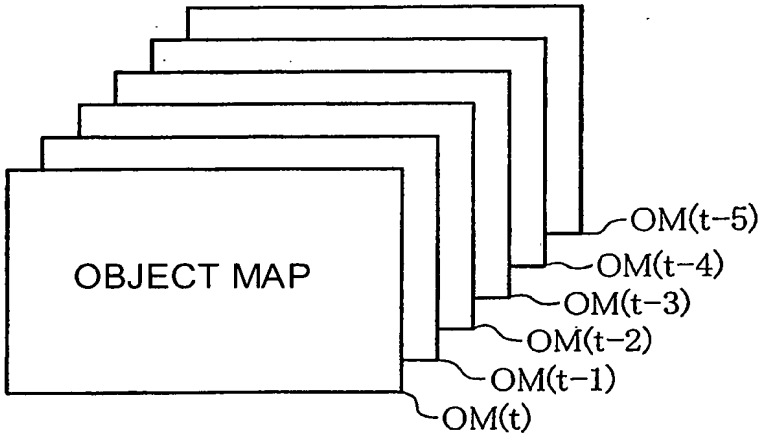


FIG.24

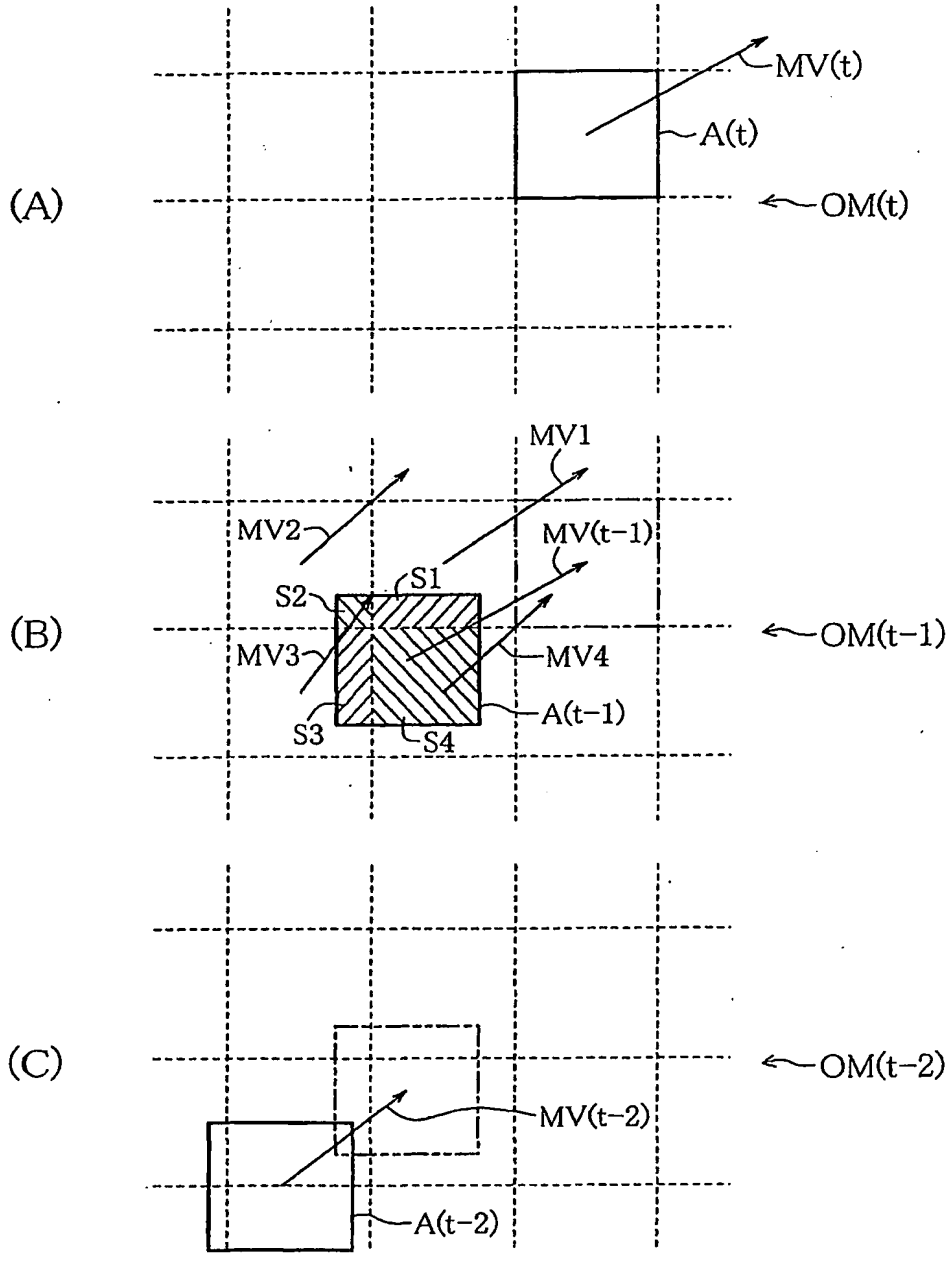

(A)
MV(t)
A(t)
OM(t)
(B)
MV1
MV2
MV(t-1)
S1
S2
MV3
MV4
A(t-1)
S3
S4
OM(t-1)
(C)
MV(t-2)
A(t-2)
OM(t-2)

FIG.25

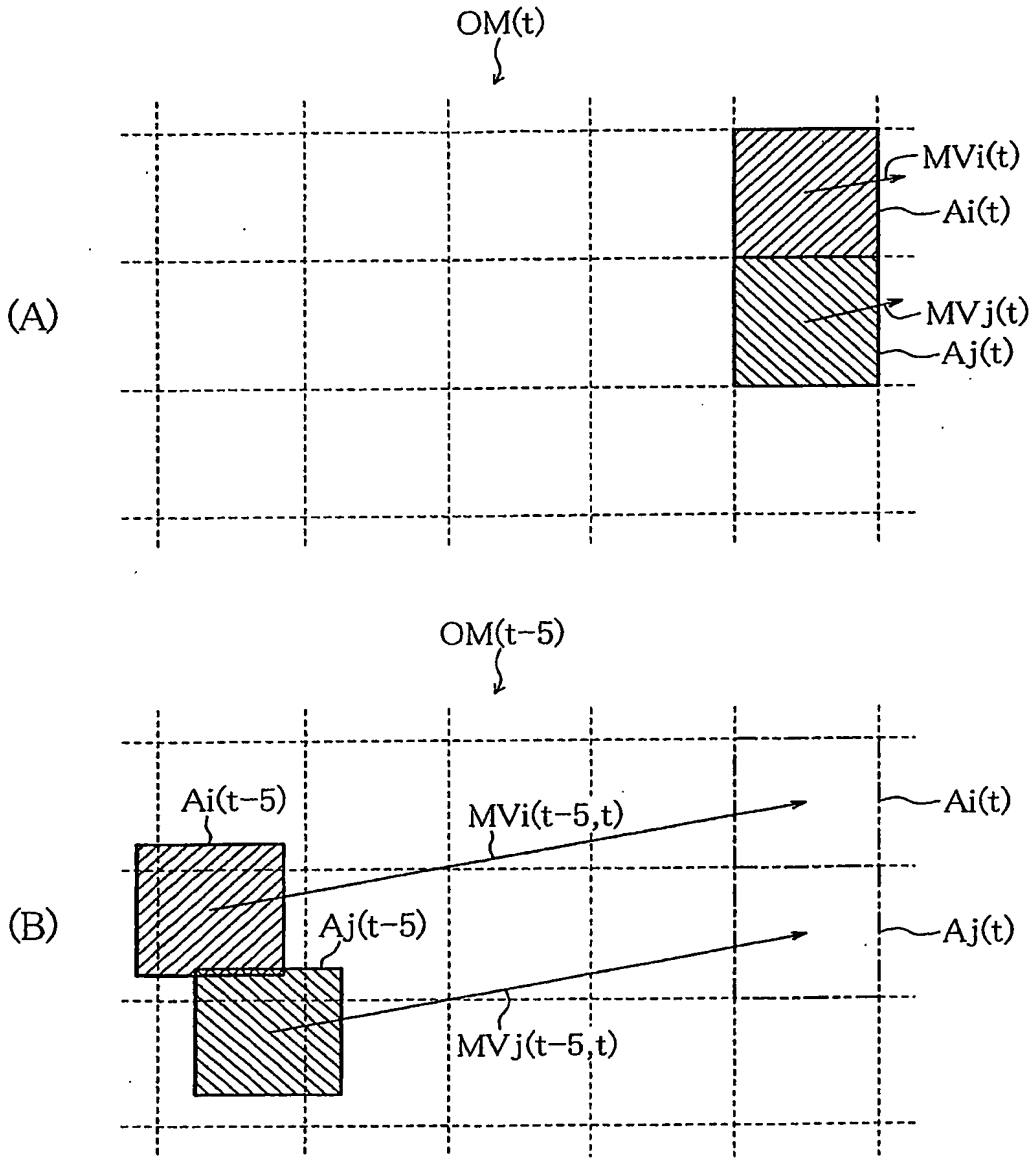


FIG.26

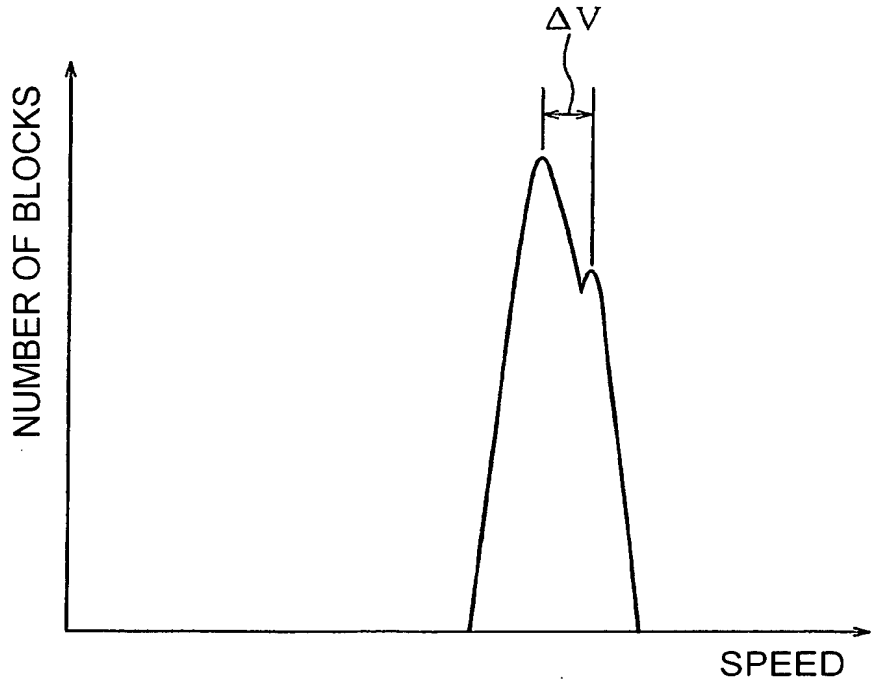
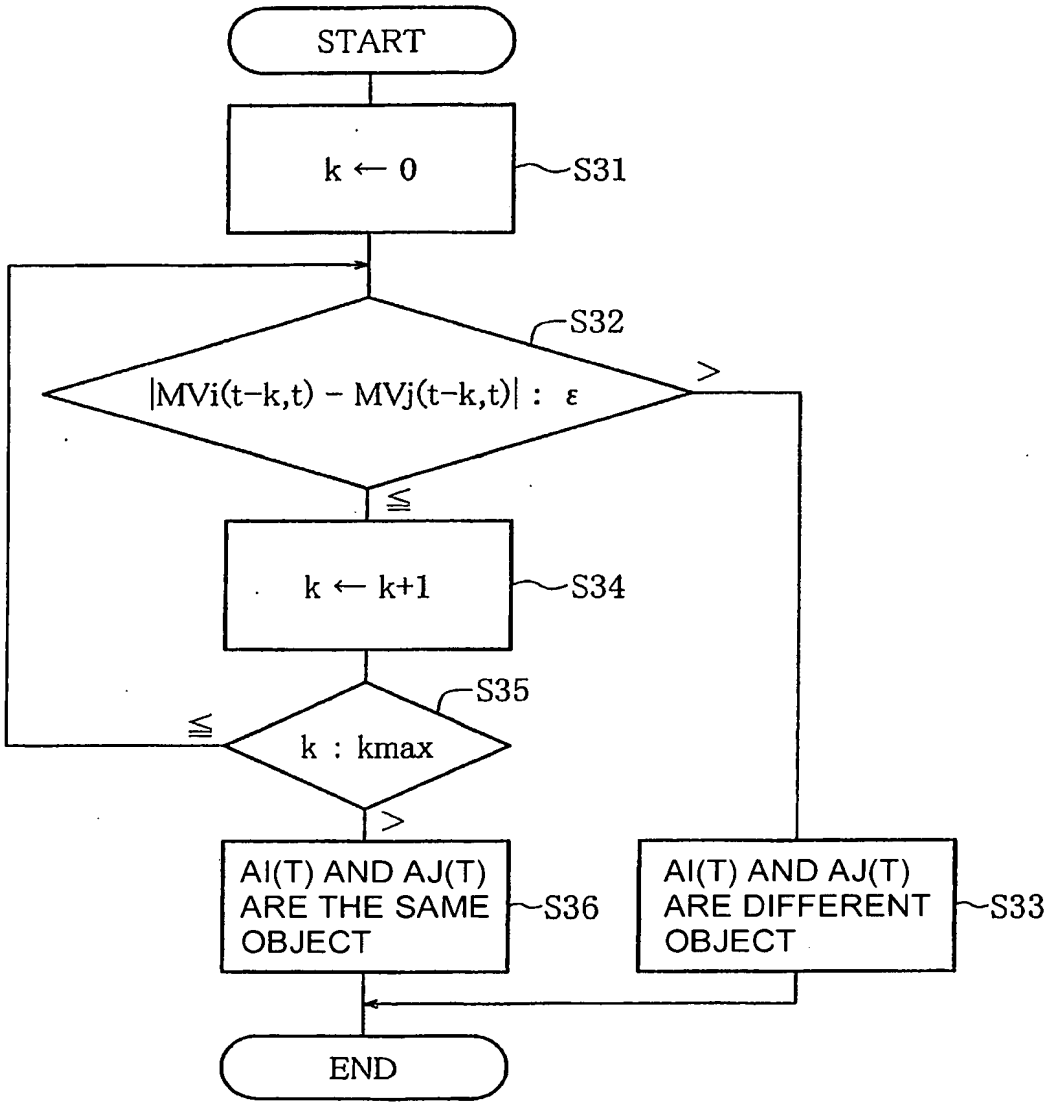


FIG.27


START
k ← 0
S31
S32
|MVi(t−k,t) − MVj(t−k,t)| : ε
>
≦
k ← k+1
S34
S35
k : kmax
≦
>
AI(T) AND AJ(T) ARE THE SAME OBJECT
S36
AI(T) AND AJ(T) ARE DIFFERENT OBJECT
S33
END

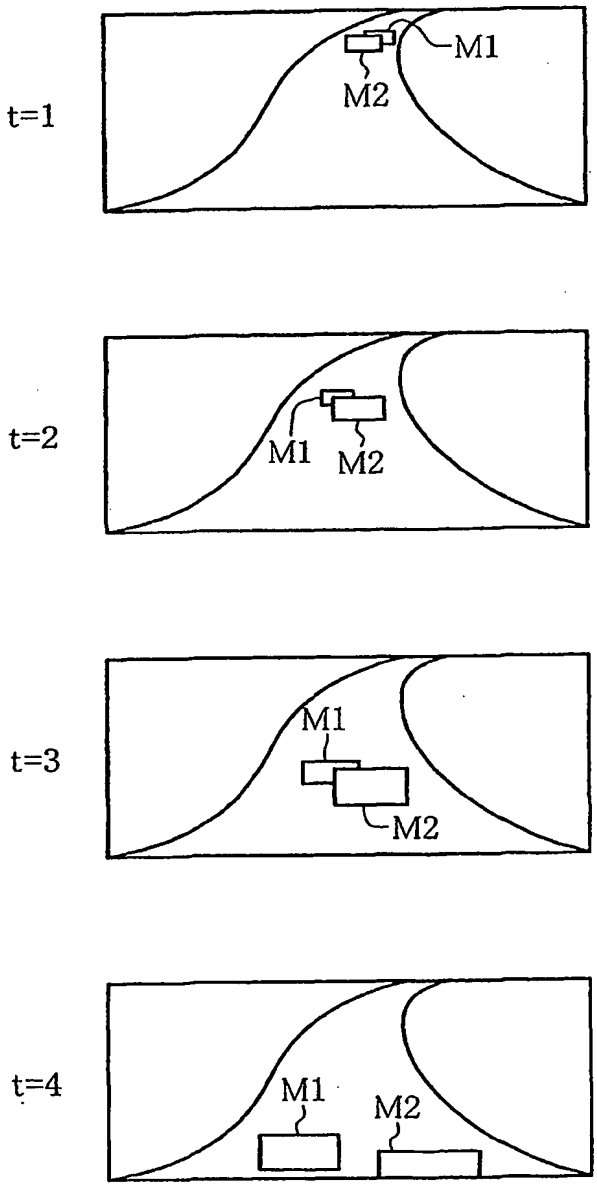



FIG.28